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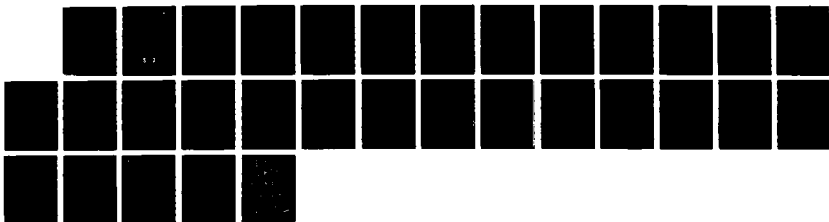
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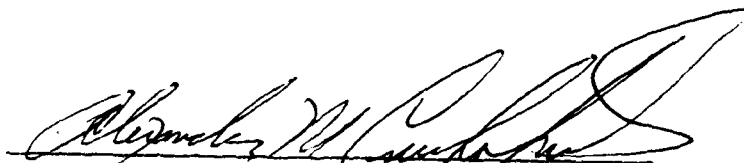
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GORDON RESEARCH CONFERENCES

FINAL TECHNICAL REPORT
GRANT NUMBER AFOSR-85-0173

SUBMITTED BY



ALEXANDER M. CRUICKSHANK
DIRECTOR

Approved for public release,
distribution unlimited

Final Report

Gordon Research Conference

on

The Dynamics of Gas-Surface Interactions

July 29 - August 2, 1985

The conference was held at Colby-Sawyer College, and was the fourth in this series held every two years. Discussions focused on understanding gas-surface encounters at the atomic and molecular level. A number of exciting new developments were reported at the meeting, including tunnelling-microscope pictures of individual surface atoms, direct measurements of electron-hole pair excitation in atom-surface collisions, time-resolved vibrational spectroscopy at surfaces, new evidence for intrinsic molecular precursors, chemistry at the surfaces of gas-phase clusters, and advances in electronic structure theory.

The participation was approximately 130 people, a considerable increase over previous meetings, reflecting the increased interest and importance of this field. Responses from attendees were very enthusiastic. Discussions were lively and concerned issues at the forefront of the field.

Copies of the program, the poster sessions, and the attendance lists are attached.

We appreciate the support of this conference by the AFOSR. This support was very helpful in attracting top speakers and attendees to the meeting.

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To: Dr. Donald Ulrich
From: James E. Shelby *J. E. Shelby*
Subject: AFOSR Final Report, 1985 Gordon Conference
on Glass
Date: September 20, 1985

The 1985 Gordon Conference on Glass was held at New Hampton School, New Hampton, NH on August 5-9, 1985. The proceedings of this conference are summarized in this report. The conference was titled "Surfaces and Environmental Interactions." Nineteen papers were presented in eight sessions. An additional poster session contained another 10-12 papers. Session topics included surface analysis, surface structure, corrosion (2 sessions), stress corrosion, bonding to glass surfaces, optical fibers, and structural fibers. The poster session, which was open to any conferee for presentation of recent, unpublished work, included papers on glass structure, the mixed alkali effect, and fluoride glasses. A copy of the program and the list of conferees are included in this report. Highlights of the papers are presented below.

→ Surface Analysis

Pantano (Penn State) reviewed the state of the art in surface analysis of glasses and other insulators. He reported a number of examples where traditional approaches to surface analysis yielded completely erroneous results. Failure to properly account for differential sputtering rates and knock-on effects account for many of these problems. Pantano concluded that surface analysis often yields incorrect results due to a lack of understanding of the basic phenomena underlying all of the common techniques. This paper was perhaps the most controversial of those presented at this meeting.

Lanford (SUNY-Albany) discussed near-surface profile analysis by ion beam techniques, with emphasis on Rutherford backscattering. He disagreed with Pantano in so far as these techniques are concerned. New data regarding weathering of glasses was presented which agreed with previous work by Lanford and Doremus.

→ Surface Structure

Garofalini (Rutgers) presented a review of the principles of surface structural calculations. This review was followed by new results regarding the surface structure of silicate glasses. Calculations indicate that the surfaces of glasses are enriched in alkali relative to the bulk composition.

Keifer (Sandia) presented a brief tutorial regarding the use of fractals to describe high surface area structures. Although most of the conferees had heard of fractals, few had any understanding of the applications of fractal theory. New work on the structure of gels was presented as an example of the applicability of fractal theory to real problems in glass science.

Corrosion

A number of papers were presented in the area of aqueous corrosion of glasses. McVay (Battelle, PNL) discussed the role of glass structure on the corrosion process. Bunker (Sandia) presented new data which indicate that the current beliefs regarding the formation of a leached layer on the surface of silicate glasses may be incorrect and that the surface really consists of a silica gel formed by a dissolution-precipitation process. Jantzen (Savannah River Lab) proposed a model of glass dissolution which is strongly influenced by the oxygen activity of the solution, i.e. she proposed that the solution chemistry may be as important as the glass composition in determining the durability of glasses under some circumstances. C. Simmons (U. of Florida) discussed recent work on fluoride glasses and demonstrated that the dissolution of these glasses is primarily via a network dissolution, rather than an ion exchange, process. Finally, Baucke and Bach (Schott Glaswerke) presented a pair of papers dealing with the thermodynamics of glass corrosion.

Stress Corrosion

Michalske (Sandia) presented a discussion of the effects of surface reactions on stress corrosion. He suggested that the edge sharing tetrahedra predicted by the modeling work presented earlier in the conference by Garofalini may be responsible for certain aspects of the stress corrosion process. Freiman (NBS) presented a different view of the stress corrosion process. Debate in this area was particularly strong in light of the differences in the approaches of the two speakers.

Glass Fibers

Discussion of glass fibers dealt with both optical fibers and fibers for composites. Rush (British Telecom) discussed the role of hydrogen in the optical aging of silicate fibers. He indicated that no work has been done to date on fluoride fibers. While the engineering problems of hydrogen aging have apparently been solved, Rush suggested that little, if any, fundamental understanding of the problem can be obtained from study of fibers and that work on simple geometry (plates) samples is needed. Scott (Hewlett-Packard) discussed the application of coating to optical fibers and the role of such coatings in protecting the fibers from both corrosion and hydrogen aging. Nishioka (Owens Corning Fiberglas) discussed the adsorption of water on fiber surfaces and presented a new technique for studying this process.

Bruckner (U. of Berlin) discussed the effect of drawing parameters on the properties of glass fibers. He proposed that the drawing process results in an oriented structure in glasses which significantly alters the properties. While his comments dealt with fibers for structural, rather than optical, applications, there appears to be considerable potential for similar effects to occur in silicate and fluoride optical fibers. These effects may be related to the drawing induced defects observed in optical fibers. LaCourse (Alfred U.) presented recent results of a study of surface viscosity of fibers. The drawing process alters both the structure and the composition of the near surface region of fibers. Viscosity measurements by the fiber elongation method appear to be especially sensitive to these changes.

GORDON RESEARCH CONFERENCES

on

Inorganic Chemistry

Grant No. AFOSR 85-0173

FINAL PROJECT REPORT

This grant provided essential financial support for the Gordon Research conference on Inorganic Chemistry which was held from August 5-9, 1985 at Brewster Academy in Wolfeboro, New Hampshire. The objective of this conference was to bring together scientists so that they could exchange recent research results and the conference provided a mechanism for the development of close interactions between these scientists. The conference was attended by 115 conferees. There were 64 scientists from academic institutions, 45 industrial participants and 6 conferees from Government agencies. In addition, there were participants from the following countries: Israel, New Zealand, West Germany, and Canada.

Lectures were presented in several areas relevant to the theme of this conference. The quality of all of the lectures was exceptionally high and considerable discussion followed each lecture. Many of the conferees expressed very favorable comments about the intellectual stimulation provided by this conference.

GORDON RESEARCH CONFERENCES

on

> Molecular Energy Transfer

Grant No. AFOSR 85-0173

FINAL PROJECT REPORT

This grant provided essential financial support for the Gordon Research conference on Molecular Energy Transfer which was held from July 8-12, 1985 at Brewster Academy in Wolfeboro, New Hampshire. The objective of this conference was to bring together scientists so that they could exchange recent research results and the conference provided a mechanism for the development of close interactions between these scientists. The conference was attended by 137 conferees. There were 115 scientists from academic institutions, 6 industrial participants and 16 conferees from Government agencies. In addition, there were participants from the following countries: West Germany, Israel, Italy, Germany, England, Canada, France, Greece, Australia, Denmark, Switzerland, and India.

Lectures were presented in several areas relevant to the theme of this conference. The quality of all the lectures was exceptionally high and considerable discussion followed each lecture. Many of the conferees expressed very favorable comments about the intellectual stimulation provided by this conference.

GORDON RESEARCH CONFERENCES

on

Molten Salts and Liquids

Grant No. AFOSR 85-0173

FINAL PROJECT REPORT

This grant provided essential financial support for the Gordon Research conference on Molten Salts and Liquids which was held from August 19-23, 1985 at Brewster Academy in Wolfeboro, New Hampshire. The objective of this conference was to bring together scientists so that they could exchange recent research results and the conference provided a mechanism for the development of close interactions between these scientists. The conference was attended by 78 conferees. There were 63 scientists from academic institutions, 11 industrial participants and 4 conferees from Government agencies. In addition, there were participants from the following countries: England, Canada, Belgium, France, West Germany, Italy, Norway, Austria, Japan, Switzerland, Greece, and the Netherlands.

Lectures were presented in several areas relevant to the theme of this conference. The quality of all of the lectures was exceptionally high and considerable discussion followed each lecture. Many of the conferees expressed very favorable comments about the intellectual stimulation provided by this conference.

GORDON RESEARCH CONFERENCES

on

Nonlinear Optics

Grant No. AFOSR 85-0173

FINAL PROJECT REPORT

This grant provided essential financial support for the Gordon Research conference on Nonlinear Optics which was held from July 28-August 2, 1985 at Brewster Academy in Wolfeboro, New Hampshire. The objective of this conference was to bring together scientists so that they could exchange recent research results and the conference provided a mechanism for the development of close interactions between these scientists. The conference was attended by 111 conferees. There were 57 scientists from academic institutions, 44 industrial participants and 10 conferees from Government agencies. In addition, there were participants from the following countries: Italy, Canada, France, West Germany, Austria, Japan, Israel and Germany.

Lectures were presetned in several areas relevant to the theme of this conference. The quality of all of the lectures was exceptionally high and considerable discussion followed each lecture. Many of the conferees expressed very favorable comments about the intellectual stimulation provided by this conference.

CONFERENCE REPORT

GORDON RESEARCH CONFERENCE ON ORGANOMETALLIC CHEMISTRY
Hawthorne College, Antrim, New Hampshire
July 29 - August 2, 1985

The Gordon Research Conference on Organometallic Chemistry was held at the time and place recorded above. The total list of attendees (attached) numbered 136. (Approximately 160 applications were received.)

The program for the conference (attached) covered a broad range of topics of current interest in organometallic chemistry. Participation in discussions was excellent, and had to be curtailed by the discussion leaders in most sessions to hold to the schedule. One scheduled speaker was unable to attend (Collins), but a member of his group (Richmond) was able to present a lecture on the listed topic.

Active participation in the conference was also evident from the poster sessions. The program (attached) shows a total of 51 posters, and several more were added at the conference.

The budget for this conference is attached. Academic speakers and discussion leaders were provided support for at least the conference fee, and all industrial participants provided their own support. Seven foreign speakers were provided travel assistance, and one additional foreign attendee (Jaffe) received partial support. The grant from the Air Force Office of Scientific Research is gratefully acknowledged; these funds were particularly helpful to bring in the foreign scientists who are leaders in this field.

B. Duane Dombek

B. Duane Dombek
Chairman

August 8, 1985

1986 GORDON RESEARCH CONFERENCE
ON
ATOMIC AND MOLECULAR INTERACTIONS ←
FINAL PROGRESS REPORT
Air Force Office of Scientific Research Grant

AFOSR-85-0173

The Gordon Research Conference on Atomic and Molecular Interactions was held from July 28 - August 1, 1986, at Plymouth State College South, Plymouth New Hampshire. The conference had approximately 130 participants and about 30% of these were from institutions in foreign (non US) countries. There was a good mixture of scientists from universities, national laboratories, and industry. The attendance at this meeting was higher than it has been previously for some time and this is probably due to a relatively higher number of foreign scientists and young scientists (faculty, postdoctorals, senior graduate students). It was part of the intent of the organizers to encourage attendance from these groups. In particular it was pleasing to see so many young people - they are the life-blood of science - without compromising the standards of the meeting. A copy of the registration list is appended to the report.

The conference brought together scientists working in related research areas, all with the common link of atomic and molecular interactions. The program, which is enclosed, was well balanced between experiment and theory. There were twenty-one speakers in nine sessions. The speakers and session chairmen generally did their jobs very well indeed. The "formal" discussions directly after the talks were usually active and often intense. The informal discussions continued during meals, in the afternoons, and after the evening sessions and were often focused by the poster sessions.

The poster sessions occurred for an hour or so before dinner and after the evening sessions; a poster sessions program is also enclosed (a few more posters were added at the conference site). These were very well attended and tended to bring people together before dinner with the discussions continuing during dinner. After the poster sessions wound down in the evenings, the discussions often continued into the late evenings (or early mornings) in the lounge. It is easy to see from the poster program how well the posters augmented the more formal talks.

Overall the conference seemed very successful. The comments received by the organizers, and the Gordon Conference Office, were very encouraging. New results were presented and discussed thoroughly. The interplay and connections between the various topics covered by the meeting went well. For example the interchange of ideas and input of information between dimer, cluster, condensed phase, and surface studies, will emerge strongly over the next several years. The interplay between dynamics and intermolecular forces and laser techniques should evolve much further over this same time period.

1986 GORDON RESEARCH CONFERENCE ON COMPUTATIONAL CHEMISTRY

Final Progress Report

Interest in this first Gordon Conference on computational chemistry was gratifying. It was held at Colby-Sawyer College, New London, New Hampshire, August 18-22, 1986. Based on responses we have received both verbally and in the form of the questionnaires used at the conference, the meeting was highly worthwhile and beneficial to the participants.

There were about twice as many applications and inquiries as available openings (150). The composition of the conference closely reflected the numbers of applicants in several occupational and geographical categories. 50% were from academia, 40% from industry, and 10% from government and private laboratories. All told we received applications from 183 organizations and were able to have 124 represented. This included 56 colleges and universities, 52 companies, and 15 other organizations. 19% of the applicants and those accepted were from outside the U.S. A total of 12 countries were represented.

There were sessions devoted to chemical reaction mechanisms, proteins, molecular mechanics, molecular orbital calculations, molecular graphics, and supercomputers. The quality and freshness of the 19 invited talks and 56 accepted poster papers were excellent. Several people commented that they liked the way the program was organized in regard to the number of speakers and the two formal poster sessions. The discussion was very good both in and out of the lecture hall. A useful by-product of the conference was formation of a committee to formulate guidelines for molecular mechanics parameters and energy minimization.

It was decided at the conference that it should meet in even numbered years so as to alternate with the Gordon Research Conference on Quantitative Structure-Activity Relationships which meets in odd-numbered years. (Many of the participants, especially from industry, go to the QSAR conference regularly.)

We believe we had laid the foundation for a successful and useful conference series. Computer-assisted molecular design hinges on computational chemistry, so industrial, academic, and government scientists will continue to have high interest in this research area.

The organizations that contributed to the conference were acknowledged at the opening session. We remain grateful for all the support we received.

D. ald B. Boyd and Kenny Lipkowitz, Co-chairmen
October 13, 1986

FINAL REPORT
FOR AFOSR GRANT NO. AFOSR-85-0173
TO THE GORDON RESEARCH CONFERENCES
FOR SUPPORT OF
THE 1986 GORDON RESEARCH CONFERENCE ON ELECTROCHEMISTRY
January 20-24, 1986
Miramar Hotel
Santa Barbara, California

The 1986 Gordon Research Conference on Electrochemistry was held at the Miramar Hotel in Santa Barbara, California, January 20-24, 1986. The Chairman of the Conference was Dennis H. Evans of the University of Wisconsin-Madison and the Vice-Chairman was Joseph G. Gordon II of IBM-San Jose.

The technical program (Appendix 1) included sixteen speakers who presented lectures on a wide range of subjects which are of considerable current interest in the field of electrochemistry. A discussion leader was designated for each session and this person facilitated the exchange of ideas and information in the discussion period which followed each lecture.

In addition to the formal technical program, two other features of the Conference should be noted. An "open session" of short talks was organized by the Vice Chairman, Dr. Gordon, and was conducted on Wednesday evening. A schedule of the "open session" talks is included as Appendix 2. Dr. Gordon also organized a poster session with 32 contributions (Appendix 3). The posters were displayed during most of the Conference and a special time was set aside for poster authors to be present to discuss their results with other conference participants.

The Gordon Research Conference on Electrochemistry continues to be very popular. This year there were about 120 participants (Appendix 4) and about 60 potential participants on the final waiting list.

The funds from the AFOSR grant were extremely valuable and contributed a great deal to the success of the Conference. The

\$13,000 which was provided was used to assist with the travel expense and conference fees for 19 speakers and discussion leaders as well as four participants who might otherwise have been unable to attend had the AFOSR funds not been available.

Enthusiasm is already beginning to build for the 1987 Conference which will be organized by Dr. Gordon. At this year's Conference, the participants elected a new Vice Chairman, Professor William R. Heineman of the University of Cincinnati who will serve as Vice Chairman of the 1987 Conference and will be Chairman in 1988.

August 11, 1986

Dr. Anthony J. Matuszko
Program Manager
Directorate of Chemical and Atmospheric Sciences
Department of The Air Force
Air Force Office of Scientific Research
Bolling Air Force Base, DC 20332

Dear Dr. Matuszko:

I am enclosing a copy of the final program, the List of Participants, and the program for the Poster Sessions for the 1986 Gordon Conference on Inorganic Chemistry which was held at the Brewster Academy, Wolfeboro, New Hampshire, August 4-8, 1986.

By all accounts, the Conference was a great success. This success would have been very difficult, if not impossible, without the support provided by the Air Force Office of Scientific Research. The support of the AFOSR enabled us to invite three overseas participants and to provide partial travel support to many U.S. participants. We were also able to achieve a healthy mix of senior and junior investigators and graduate students.

The theme of the 1986 conference was Mechanistic Aspects of Inorganic Chemistry. There were five sessions: Gas Phase-Solution Comparisons and Volumes of Activation, Coordination Chemistry and Homogeneous Catalyses, Electron and Atom Transfer Reactions, Energetics and Reactivity of Excited States, and Transport Processes Coupled to Chemical Reactions. The discussion following the presentations was generally vigorous, with contributions from many of the participants. In fact, the open discussions and free exchange of views were one of the strengths of the 1986 Conference.

It was a personal pleasure seeing you at the Conference and I want to acknowledge once more, with thanks, the support provided by the AFOSR.

Yours sincerely,

Norman Sutin
Chairman, 1986 Gordon Conference
on Inorganic Chemistry

sk

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AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

CONFERENCE REPORT

Gordon Research Conference on Organometallic Chemistry
Proctor Academy, Andover, New Hampshire 093216
August 10-15, 1986

The Gordon Research Conference on Organometallic Chemistry was held at Proctor Academy in Andover, New Hampshire, August 10-15, 1986. There were 147 attendees (list attached) and 160 applications were received. There were 11 foreign participants.

The program for the conference is attached. A very broad range of subjects was discussed. The traditional topics of synthetic, mechanistic and structural organometallic chemistry were well and broadly represented but the conference also encompassed discussions of, for example, inorganic polymers (polyphosphazenes) and the use of inorganic silicon polymers for production of ceramics, applications of matrix isolation techniques in organometallic chemistry and interactions of small clusters in the gas phase with simple organic compounds. Dr. James Roth from Air Products was the Thursday evening speaker and addressed the future of catalysis. The future directions of this field were analyzed and the potential roles of industry and universities were discussed. Lively discussions followed most all talks with broad participation by a large number of participants.

The poster sessions were excellent and again a large number of attendees participated. There were 49 posters scheduled in advance (program attached) and several more were added at the conference.

The conference budget is attached. Academic speakers and discussion leaders were provided support for the conference fee and a substantial fraction of their travel expenses. Industrial speakers and discussion leaders provided their own support. Sufficient funds were also available to provide several young academic investigators and one foreign scientist with partial travel allocations. The grant from AFOSR which supplemented the special fund was critical to the success of the conference. In particular, it permitted invitation of foreign scientists and a good representation of US scientists from the west coast. The grant is gratefully acknowledged.

Maurice Brookhart
Chairman
August 10-15, 1986

1986 GORDON RESEARCH CONFERENCE ON POLYMERS (WEST)

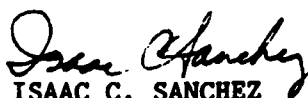
(1986)

FINAL PROGRESS REPORT

The Gordon Conference on Polymers (West) was held from 1986 January 6-10 at the Miramar Hotel in Santa Barbara, California. The conference had 142 participants with 18 from foreign countries. There was a good mixture of scientists from universities and government and industrial laboratories. For approximately 30 participants, this was the first time they had attended a Gordon Conference. For the first time in its history, this conference was oversubscribed and about 20 people were not accepted to the conference.

Three subject areas were emphasized at the conference: polymer blends (including block copolymers), gels and interfacial phenomena. There were 16 speakers with 7 from foreign countries. Because of the small number of speakers, there was ample time for discussion; often these discussions were lively and informative. The Monday evening session was completely devoted to a poster session and 35 posters were presented. The posters were left up all week and this proved to be very beneficial.

In general, conferees felt this conference was very successful; at least two senior scientists told the chairman that this was the best Gordon Conference that they had ever attended.



ISAAC C. SANCHEZ
Chairman
1986 Gordon Research
Conference on Polymers (West)

FINAL REPORT TO
THE AIR FORCE OFFICE OF SCIENTIFIC RESEARCH
for
THE 1986 GORDON RESEARCH CONFERENCE ON
VIBRATIONAL SPECTROSCOPY

Conference Chairman, 1986:	Richard B. Miles Princeton University
Conference Vice-Chairman, 1986:	William Woodruff
Conference Site:	Brewster Academy Wolfeboro, New Hampshire
Conference Dates:	August 11-15, 1986
AFOSR Grant Number:	AFOSR-85-0173

September 17, 1986

FINAL CONFERENCE REPORT FOR 1986 GORDON RESEARCH CONFERENCE
ON VIBRATIONAL SPECTROSCOPY

Brewster Academy, Wolfeboro, New Hampshire
August 11-15, 1986

Chairman: Richard B. Miles
Vice-Chairman: William Woodruff

The 1986 Gordon Research Conference on Vibrational Spectroscopy was held August 11-15 at Brewster Academy in Wolfeboro, New Hampshire. The conference focused on state-of-the-art developments in vibrational spectroscopy and was broken down into the following topical areas:

1. Vibrational Spectroscopy of Solids
2. Resonant Raman Spectroscopy
3. Coherent Spectroscopy
4. Surface Spectroscopy
5. New Methods in Vibrational Spectroscopy
6. Vibrational Coupling
7. Ions and Molecular Beams

In addition, a series of evening speakers presented more lengthy talks on particularly relevant new theoretical and experimental work. Following these evening talks, were a series of poster sessions. A copy of the schedule of the Vibrational Spectroscopy Conference is included as Appendix A.

The Vibrational Spectroscopy Conference was honored this year to be the location for the presentation of the 1986 Lippincott Award for innovative contributions to vibrational spectroscopy. This award was established in 1975 to honor Ellis Lippincott. The recipient is selected jointly by the Coblentz Society, the Optical Society of America, and the Society for Applied Spectroscopy. This year, it was awarded to Wolfgang Kaiser from the University of Munich for his work in picosecond vibrational spectroscopy. The presentation was on Monday night, and Professor Kaiser followed it with a talk on current research in his laboratories. This year the award was handled by the Coblentz Society, and that Society sponsored Professor Kaiser's travel to and from the Gordon Conference and shared the fixed-fee expenses. A list of recipients of the Lippincott Award is included as Appendix B.

The total conference funding was \$19,150 plus an additional \$1,150 which was provided by industrial contributions for conference social activities and incidental expenses. The breakdown of the support is as follows:

Gordon Research Conferences:	\$10,500
Air Force Office of Scientific Research	4,250
Office of Naval Research	4,250
Coblentz Society	150

Instruments S.A., Inc.	500
Spectra Physics	200
Lambda Physik	200
Spex, Industries	250

Support for travel and fixed fees was given to each of the speakers and discussion leaders. In addition, fixed-fees were given to eight foreign scientists and nine young researchers from the United States. A breakdown of the funding allocation is shown in Appendix C.

The poster sessions provided a focus for the evenings' activities following the evening sessions. Much of the new science discussed at the conference was presented in this format. Titles of the 35 submitted posters are included in this report as Appendix D.

Attendance at the conference was largely from academic institutions (52%), with 32% from industry, and the remaining 16% from National Laboratories. Foreign participation included conferees from Sweden (1), the United Kingdom (2), Germany (3), Austria (1), Japan (1), France (2), Denmark (1), Poland (1), and Canada (1). Total attendance was 94. A list of attendees is included as Appendix E.

ATTACHMENTS: Appendix A - Final Conference Schedule
 Appendix B - The Lippincott Award, List of Recipients
 Appendix C - Funding Allocation
 Appendix D - Titles of Presented Abstracts for Poster Sessions
 Appendix E - Final Conference Attendance Sheets

TECHNICAL REPORT
TO
AIR FORCE OFFICE OF SCIENTIFIC RESEARCH
AFOSR-85-0173

concerning

GORDON RESEARCH CONFERENCE

on

INORGANIC CHEMISTRY

Brewster Academy, Wolfeboro, NH

August 3-7, 1987

F. A. Cotton, Conference Chairman

A. M. Cruickshank, Director, Gordon Research Conferences

General Remarks

The thirty-seventh Gordon Research conference on Inorganic Chemistry was held from August 3 to August 7, 1987 at the Brewster Academy in Wolfeboro, NH.

The conference was organized by the Chairman, F. A. Cotton, of Texas A&M University, with assistance from the Vice Chairman, J. N. Armor of Air Products Company and an advisory committee consisting of the following:

- *J. P. Fackler, Jr., Texas A&M
- *A. H. Cowley, University of Texas (Austin)
- M. H. Chisholm, Indiana University
- R. A. Walton, Purdue University

(* Past Chairmen of Inorganic GRC's)

The general title of the conference was

INTERNATIONAL THEMES IN INORGANIC CHEMISTRY

By supplementing the funds provided by the GRC with a generous grant from the Air Force Office of Scientific Research, it was possible to assist an unusually (probably unprecedentedly) large number of speakers from abroad to attend. The program of the meeting is attached as an appendix to this report. In addition to the thirteen speakers and discussion leaders from the United States, the following countries were represented:

Costa Rica	1 discussion leader
Italy	1 speaker
Spain	2 speakers
United Kingdom	6 speakers
Federal Republic of Germany	2 speakers
France	1 speaker
India	1 speaker

In general speakers were very disciplined and limited their formal presentations times to ca. 40 minutes so that there was ample discussion of each presentation.

Conference Business

At the business meeting on Thursday evening there were two principal items.

1. Election of 1988 Vice Chairman. In a prior caucus of the present Chairman and Vice Chairman plus all former chairmen who were present (Fackler, Parry, Basolo, Cowley) two candidates were selected: Christopher Reed of USC and Tobin J. Marks of Northwestern. These two names were submitted to the attendees and further nominations requested. None were proposed. The qualifications of the nominees were then summarized and a written ballot was conducted.

The winner was T. J. Marks. Under the traditional practice of the Inorganic Chemistry GRC, Marks will not only be Vice Chairman in 1988 but Chairman in 1989.

2. Possible Change of Venue. The possibility of changing the site of the Inorganic Chemistry conference to Salve Regina College in Newport, R. I. was raised for preliminary discussion. Some of the features of the Rhode Island site were presented and discussed by Alan Cowley. It was noted that if we wish to retain our traditional scheduling during the first week in August, no change could be made before 1989. It was agreed that future Chairman (Armor, Marks) and perhaps others (e.g., Fackler and Cowley, who are active in GRC affairs) should check out the pros and cons more carefully and the matter can be discussed again next year.

Technical Report

Since it is of the essence of the GRC's that technical information presented is confidential, no specifics of the talks or discussions can be given here. From the title, the broad and diverse range of subjects covered may be inferred. Every talk generated vigorous discussion and there is no doubt that the consciousness of many participants was raised regarding the advances being made in fields other than their own. In addition the expected exchanges of views between persons with a common interest in the fields discussed were keenly pursued.

The great virtue of this and most other GRC's in Inorganic Chemistry is that by cutting across a large range of specialties, the GRC acquaints reserarchers in many different and disparate areas with each other and with important but otherwise poorly understood advances in other areas. Maintaining the intellectual continuity as well as personal contacts right across the field of inorganic chemistry is our most important function. This year we had the additional benefit of contributing to the international network of contacts and friendships.

**FINAL REPORT
GORDON RESEARCH CONFERENCE
ON
MOLTEN SALTS AND LIQUID METALS
AUGUST 17-21, 1987**

The above Conference was held at the Brewster Academy in Wolfeboro, New Hampshire. It was attended by 84 scientists from 14 different countries. This number included 22 invited speakers and 9 invited discussion leaders. In addition, there were 44 posters which involved many other participants in this Conference. A complete list of participants, the program, and the titles of the posters are appended.

The invited lectures were presented in nine sessions. Twelve lectures addressed various aspects of molten salt chemistry; six lectures dealt with liquid metals, and the remaining four involved metal-molten salt solutions. All sessions began with a 10-15 minute introduction by a discussion leader. These introductions were very useful in making the lectures more understandable to the non-specialists in the particular session topic.

The four poster sessions were held after each of the evening sessions. These sessions were very well attended and involved a lot of discussion, usually until 11 to 12 pm.

The funds received from AFOSR were crucial to the success of the Conference. A total of 19 graduate students, postdoctoral fellows and other young participants were provided partial or full support for their registration fees which included room and board. In addition, the registration fees of the invited speakers and the discussion leaders were covered by the available funds. In a few cases partial travel support was also provided. It would have been impossible to assist the younger participants without the extra funds from AFOSR.

The comments received by the Chairman indicate that this conference was a successful one.

I would like to express my gratitude to AFOSR for the financial assistance to this Conference.

Original Signed By
GLEB MAMANTOV

Gleb Mamantov
Chairman, 1987 Gordon Research
Conference on Molten Salts and
Liquid Metals

Shell Development Company

A Division of Shell Oil Company



Westhollow Research Center
P. O. Box 1380
Houston, Texas 77001

July 31, 1987

United States Air Force
Office of Scientific Research
Bolling Air Force Base
DC 20332-6448

Attention: Dr. Anthony J. Matuszko

Dear Dr. Matuszko:

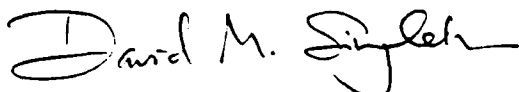
Subject: Chairman's Report - Gordon Conference on Organometallic
Chemistry, 1987

The above Conference was held this year at Salve Regina College in Newport Rhode Island. The registration was 106 Conferees, of whom 6 came from government institutions (both domestic and foreign), 30 from industry and the remaining 70 from academia. The national distribution was: USA 87, West Germany 5, Japan 4, United Kingdom 3, Canada 2, Switzerland 2, France 1, Israel 1, South Africa 1.

The discussion was particularly vigorous in the session on Physical Methods, which drew a number of favorable comments on topic selection. This situation arose partly from a determined effort by the speakers to invite discussion during the actual talk. Some of the overseas attendees took part in the discussion more actively (considering their numbers) than did the domestic Conferees, and I believe that the Conference was the better for it. Many of the foreign Conferees have not been in regular attendance at Gordon Conferences, and this was a good opportunity, both for them and for the domestic scientists, to meet and discuss chemistry.

A major theme which arose at this Conference was the extreme sensitivity of many hydrido reaction intermediates to traces of oxygen, and the difficulties which this could cause, both in interpretation and in reproducibility of results. Several chemists returned to their laboratories with a new insight into the possible origin of some of their problems.

The generous support of the USAF-OSR, which was acknowledged at the opening and closing of the Conference, enabled the attendance of a number of domestic and foreign speakers who would otherwise not have been able to come. This was a benefit not only to those persons, but to the other Conferees who were thus able to meet and exchange ideas with these chemists.

A handwritten signature in cursive script, reading "David M. Singleton".

David M. Singleton, PhD
Conference Chairman

Attachments

cc: Dr. Alexander M. Cruickshank
Director, Gordon Research Conferences
Colby-Sawyer College
New London, N. H. 03257



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October 12, 1987

Dr. A. J. Matuszko
Air Force Office of Scientific Research
Bowling Air Force Base
Washington, DC 20332-6448

Dear Dr. Matuszko:

I would like to briefly inform you concerning the 1987 Gordon Research Conference on Polymers, which the Air Force Office of Scientific Research was kind enough to cosponsor.

All of the speakers and discussion leaders not only showed up, but did a very good job. The general consensus of the meeting clearly was that the meeting was a huge success. I have attached two letters to this effect.

The only problem with the meeting was the fact that it rapidly reached the newly assigned maximum of 135 attendees. Fortunately, there were enough cancellations that most of the people who wished to come could get in at the very last moment. Overseas participants included speakers and discussion leaders from England, Belgium, Canada, Australia and Japan. For your information there were no participants from the eastern bloc countries at this meeting. On behalf of the participants, and especially the speakers and discussion leaders, I would like to thank the Air Force Office of Scientific Research for cosponsoring this excellent meeting.

With best regards.

Sincerely,

James E. McGrath
Chairman, 1987 Gordon Research
Conference on Polymers

JEM/tah

Enclosures

FINAL PROGRESS REPORT

1987 GORDON RESEARCH CONFERENCE (WINTER) ON POLYMERS

SHIRO MATSUOKA, CHAIRPERSON

Judging from the comments made by many conferees, the 1987 Gordon Conference on Polymers (West) was a success. Financial support from the Gordon Conference, Office of Naval Research and Air Force Office of Scientific Research was a crucial factor in being able to create an excellent list of speakers, discussion leaders and participants. 121 conferees included 17 foreign visitors; 56 are from industry, 52 from academia and 13 from government. 29 people received financial assistance, some of whom simply could not have attended the Conference had there been no such support. The program was organized to include only two lectures in the morning sessions and one or two lectures in the evening sessions. This format provided an ample opportunity for in-depth discussions for everyone. This format is highly recommended for other Gordon Conferences.

The choice of topics and lecturers was strongly supported by the attendees as timely and as of high scientific merit. Every session generated vigorous discussions in a friendly atmosphere. A good number of the attendees also were engaged in informal discussions. The large number of posters were displayed from Monday to Friday.

The Conference succeeded in achieving its goals, namely to provide a scientific environment for free interactions and uninhibited interchange of concepts, techniques and current results among participants from various disciplines and provide the seed for future collaborations among these multi-disciplined scientists.

Attachments:

Program

Poster Session Titles

List of Attendees

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